WHAT IS CLAIMED IS:

1. A method of routing alarm signals in a signaling server disposed in a telecommunications network, said signaling server including a plurality of cards organized into multiple stages having a tree configuration, comprising the steps of:

generating alarm data by cards disposed at a select stage in said tree configuration;

transmitting said alarm data by said cards to cards disposed at a subsequent stage in said tree configuration;

multiplexing, by said cards disposed at said subsequent stage, said alarm data into a serial bitstream having multiple frames by allotting predetermined time slots; and

forwarding said serial bitstream, by each of said cards disposed at said subsequent stage, through said tree configuration for successively multiplexing said serial bitstreams into a single multiplexed bitstream at a trunk of said tree configuration.

2. The method of routing alarm signals in a signaling server disposed in a telecommunications network as set forth in claim 1, further comprising the step of inserting, by said cards disposed at said subsequent stage, alarm data pertaining to said cards disposed at said subsequent stage into said serial bitstream.

3. The method of routing alarm signals in a signaling server disposed in a telecommunications network as set forth in claim 2, further comprising the step of providing said single multiplexed bitstream to a controller controlling said tree configuration.

4. The method of routing alarm signals in a signaling server disposed in a telecommunications network as set forth in claim 3, wherein said controller comprises a system timing generator, and further wherein said tree configuration comprises at least one clock distribution module card coupled to a plurality of bus control module cards, each bus control module card interfacing with at least one line interface card.

5. The method of routing alarm signals in a signaling server disposed in a telecommunications network as set forth in claim 4, wherein each of said clock distribution module cards and bus control module cards is provided with an ID code in a serial framed control signal generated by said system timing generator, said ID codes facilitating said step of multiplexing by said clock distribution modules.

6. An apparatus for collecting alarm signals in a signaling server disposed in a telecommunications network, comprising:

a system timing generator including circuitry for producing a serial control signal;

a plurality of clock distribution modules organized into at least one level in a nested hierarchy coupled to said system timing generator;

a plurality of bus control modules coupled to said at least one level of clock distribution modules in said nested hierarchy, each bus control module interfacing with a plurality of printed board assembly (PBA) cards disposed on a bus segment, wherein each bus control module generates a status signal encoded with alarm data towards said at least one level of clock distribution modules; and

multiplexing circuitry in each clock distribution module to multiplex status signals received from one of a lower level in said nested hierarchy and said plurality of bus control modules into a serial bitstream having multiple frames by assigning predetermined time slots to said alarm data based on control information provided in said serial control signal.

7. The apparatus for collecting alarm signals in a signaling server disposed in a telecommunications network as set forth in claim 6, further comprising means in each clock distribution module for inserting its own alarm data into said serial bitstream based on said control information provided in said serial control signal.

8. The apparatus for collecting alarm signals in a signaling server disposed in a telecommunications network as set forth in claim 7, wherein said system timing generator comprises clock circuitry to produce a system time clock based on a reference input of a predetermined frequency.

9. The apparatus for collecting alarm signals in a signaling server disposed in a telecommunications network as set forth in claim 8, wherein said bus segment comprises a Compact Peripheral Component Interconnect (CPCI) bus segment.

10. The apparatus for collecting alarm signals in a signaling server disposed in a telecommunications network as set forth in claim 8, wherein said reference input comprises a derived clock signal generated from a telecommunications signal received at one of said PBA cards.

11. The apparatus for collecting alarm signals in a signaling server disposed in a telecommunications network as set forth in claim 8, wherein said serial control signal comprises a framed bitstream.

12. An alarm collection method using a multi-stage clock distribution system in a signaling server organized in a plurality of racks, each rack including a plurality of shelves, said clock distribution system having a system timing generator, at least one clock distribution module, and a plurality of bus control modules, each bus control module interfacing with at least a portion of line cards disposed in a shelf, said method comprising the steps of:

determining the size of said signaling server by ascertaining the number of racks and assigning levels to said clock distribution modules in a nested hierarchy based on said determination;

assigning unique IDs to said shelves;

generating, by said system timing generator, a framed serial control signal containing unique shelf ID information and clock distribution module level information;

generating, by each bus control module, a status signal encoded with alarm data; and

successively multiplexing said status signal towards said system timing generator through said nested hierarchy of clock distribution modules into a serial bitstream having multiple frames by assigning predetermined time slots to said alarm data by each clock

distribution module based on control and ID information provided in said framed serial control signal.

13. The alarm collection method using a multi-stage clock distribution system in a signaling server as set forth in claim 12, wherein said step of assigning levels to said clock distribution modules comprises the steps of:

if said signaling server includes more than 8 racks, writing a first level code into a select field of said framed serial control signal by said system timing generator;

transmitting said framed serial control signal to a clock distribution module coupled to said system timing generator;

upon reading said first level code, assuming a Central Level by said clock distribution module coupled to said system timing generator and thereby becoming a C-Level clock distribution module;

changing said first level code into a second level code by said C-Level clock distribution module in said select field of said framed serial control signal;

transmitting said framed serial control signal to a clock distribution module coupled to said C-Level clock distribution module;

upon reading said second level code, assuming a Lead Level by said clock distribution module coupled to said C-Level clock

distribution module and thereby becoming an L-Level clock distribution module;

changing said second level code into a third level code by said L-Level clock distribution module in said select field of said framed serial control signal;

transmitting said framed serial control signal to a clock distribution module coupled to said L-Level clock distribution module;

upon reading said third level code, assuming a Rack Level by said clock distribution module coupled to said L-Level clock distribution module and thereby becoming an R-Level clock distribution module;

if said signaling server includes between 2 and 8 racks, inclusive, writing said second level code into said select field of said framed serial control signal by said system timing generator;

transmitting said framed serial control signal to said clock distribution module coupled to said system timing generator;

upon reading said second level code, assuming said Lead Level by said clock distribution module coupled to said system timing generator and thereby becoming said L-Level clock distribution module;

changing said second level code into said third level code by said L-Level clock distribution module in said select field of said framed serial control signal;

transmitting said framed serial control signal to a clock distribution module coupled to said L-Level clock distribution module;

upon reading said third level code, assuming a Rack Level by said clock distribution module coupled to said L-Level clock distribution module and thereby becoming an R-Level clock distribution module;

if said signaling server includes a single rack, writing third level code into said select field of said framed serial control signal by said system timing generator;

transmitting said framed serial control signal to said clock distribution module coupled to said system timing generator; and

upon reading said third level code, assuming Rack Level by said clock distribution module coupled to said system timing generator and thereby becoming said R-Level clock distribution module.

14. The alarm collection method using a multi-stage clock distribution system in a signaling server as set forth in claim 13, wherein said step of assigning unique IDs to said shelves comprises the steps of:

assigning, by said system timing generator, a redundancy Plane code to said C-Level clock distribution modules in said nested hierarchy;

assigning, by said C-Level clock distribution modules, a Group code to said L-Level clock distribution modules in said nested hierarchy;

assigning, by said L-Level clock distribution modules, a Rack code to said R-Level clock distribution modules in said nested hierarchy; and

assigning, by said R-Level clock distribution modules, a Shelf code to said shelves.

15. The alarm collection method using a multi-stage clock distribution system in a signaling server as set forth in claim 14, wherein said redundancy Plane code comprises a two-bit field in said framed serial control signal.

16. The alarm collection method using a multi-stage clock distribution system in a signaling server as set forth in claim 15, wherein each of said Group, Rack, and Shelf codes comprises a separate four-bit field in said framed serial control signal.